

Servo-Drive Amplifier for Micro-Satellite Superconductor-Levitated Flywheels, Phase I

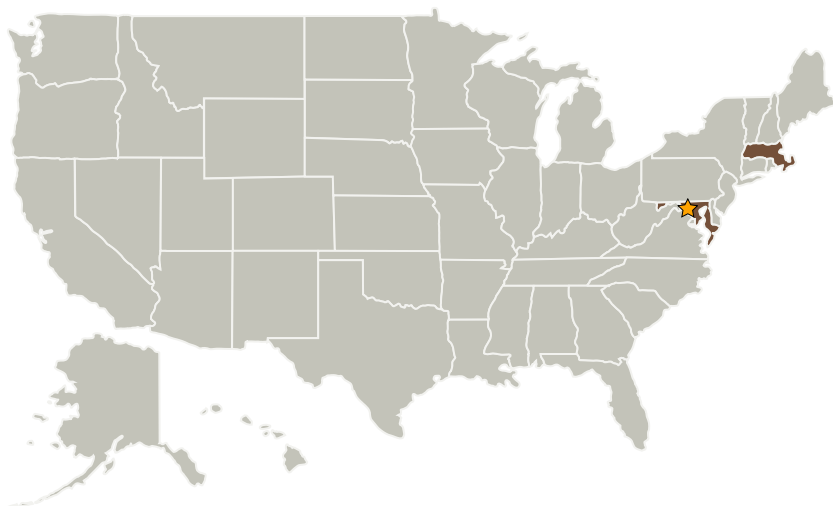
Completed Technology Project (2004 - 2004)



Project Introduction

A new servo-drive technology is available to support energy storage and navigation for micro-satellites. Exploiting the "pinning" effect of high-temperature superconductors, high-speed momentum wheels can be suspended in a stable condition that is virtually independent of speed (unlike magnetic levitation). Aside from the motor drive, this levitation system is compact and highly energy efficient. To be effective it requires a drive that is equally compact and energy efficient. It also requires extremely high servo performance with especially low torque ripple. Barrett proposes an innovation to support such a compact/efficient drive amplifier. Phase I will focus on feasibility of this approach and Phase II will support prototype design and aggressive space qualification of this unit.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Barrett Technology, LLC	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Newton, Massachusetts



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Maryland

Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

William F Townsend

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.2 Radio Frequency
 - └ TX05.2.2 Power-Efficiency